NEW NOVICE QUESTIONS

The Federal Communications Commission has announced the addition of eight questions for study by those seeking the Novice Class license issued by the Commission. These questions supplement those listed in the Novice chapter of the Radio Amateur's License Manual. The answers are those of the League staff.

1. *How are amateur signals propagated over great distances?*

Radio signals in the high frequency (h.f.) portion of the radio spectrum are bent back toward earth by layers of ionized air, the ionosphere, up to 250 miles above the globe. The signals then return to earth a great distance away. The process is known as "skip"; the skip distance varies with the frequency of the radio signal and the height and density of the ionized cloud, which in turn varies with the time of day, the time of year and the year's position in the 11-year sunspot cycle.

2. *International radiocommunications by way of amateur stations are subject to what restriction(s)?*

Article 41 of the Radio Regulations, Geneva, 1959, prohibits communications between amateurs in different countries if one of the countries objects to such communications. It limits international communications by amateurs to messages of a technical nature relating to tests and to remarks of a personal nature for which, by reason of their unimportance, recourse to the public telecommunications service is not justified. It prohibits international communications on behalf of third parties; that is, on behalf of anyone other than the licensed amateurs who are in communication with one another. (The latter provision can be modified by special agreement between countries, and the U.S. has arrangements with 20 countries. The list appears in the *License Manual* and in frequent issues of *QST*)

3. *What is the basic usage of a capacitor?*

The capacitor's basic usage is to store electrical energy at one time and release it later, in accordance with the design of a particular circuit to accomplish a particular aim. It is also used to block the flow of direct current while permitting the effective flow of alternating current through the circuit of which the capacitor is a part.

4. *For what reasons are height limitations placed on antenna structures for amateur stations?*

The Commission's rules for the amateur service contain regulations on antenna height so as to prevent amateur antennas from becoming a hazard to air navigation.

5. *What methods are available for determining whether the transmitter output frequency is within the authorized frequency band?*

The frequency of the transmitted signal can be measured by a frequency meter, a calibrated wave-meter or a receiver of known accuracy. Comparison of these instruments with standard-frequency broadcasts of the National Bureau of Standards (WWV, WWVH, WWVB, etc.) should be made frequently.

6. *What is the most likely defect of a tube which has proper heater voltage at the socket but which fails to warm up?*

The heater is "open" (i.e., broken) so that it no longer provides a complete path for the heater current.

7. *What precaution(s) can be taken to reduce the possibility of shock hazard in electrical equipment?*

Precautions include use of equipment enclosures which prevent contact with any circuits or wiring carrying power; use of chassis ground within an equipment which in turn is connected to an external ground (e.g., a water pipe) in common with other equipments being used at the same time; use of transformer power supplies in preference to "A.c./d.c." types; use of polarized, three-conductor wiring for connection to the regular commercial power sources, including use of the neutral wire; placing antenna wires and feedlines to that there is no possibility of contact with power lines; use of adequately-rated components and wiring to minimize the possibility of breakdown which might cause dangerous voltages to appear at unexpected points; use of bleeder resistors across large capacitors (e.g., in power supplies) to discharge any voltage remaining when the equipment is turned off; use of interlock switches which disable power supplies as equipment enclosures are opened.

8. *The plate voltage in the final stage of an amateur transmitter is normally measured between what points in the circuit?*

The plate voltage is normally measured between the B-plus connection and the cathode(s) of the final amplifier tube(s). Where no cathode resistor is in use, it may be more convenient to measure plate voltage across the output filter capacitor of the high voltage supply.

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